# United States Department of the Interior

FISH AND WILDLIFE SERVICE

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November 5, 2012

Memorandum

To: Assistant Regional Director, Ecological Services, Region 6, Fish and Wildlife Service, Denver, Colorado (Attn: Amelia Orton-Palmer)

From: Western Colorado Supervisor, Ecological Services, Grand Junction, Colorado

Subject: Intra-Service Biological and Conference Opinion - Issuance of a Section 10(a)(1)(B) Permit for Incidental Take of an Endangered Species Associated With the San Luis Valley Regional Habitat Conservation Plan

This biological and conference opinion (Opinion) is pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). The Opinion addresses impacts that may result from issuance of incidental take permits (permits) in accordance with section 10(a)(1)(B) of the Act for incidental take of an endangered species associated with the San Luis Valley Regional Habitat Conservation Plan (HCP) in Alamosa, Conejos, Costilla, Rio Grande, Mineral and Saguache counties, Colorado. Issuance of the permits may affect the endangered southwestern willow flycatcher (*Empidonax traillii extimus*) (flycatcher) and its proposed critical habitat. Consistent with our policies concerning intra-service consultations and for the purposes of this Opinion, we also consider another affected species; the candidate western U. S. distinct population segment of the yellow-billed cuckoo (*Coccyzus americanus*) (cuckoo) as if it was proposed to be listed as threatened or endangered.

This Opinion was prepared using information from the following sources: the final HCP (ERO 2012), final environmental assessment (EA) (USFWS 2012a), and information in our files. We actively participated in the preparation of the HCP and EA. These documents provide additional detail and supporting information for this Opinion and are hereby incorporated by reference. A complete administrative record of this consultation is on file in our office.

## BIOLOGICAL AND CONFERENCE OPINION

DESCRIPTION OF PROPOSED ACTION

The proposed action is issuance of permits to 12 permittees by Region 6 of the Fish and Wildlife Service (Service), in accordance with section 10(a)(1)(B) of the Act, for incidental take of the flycatcher in the San Luis Valley, Colorado (Valley). The cuckoo will also be covered by the permits if listed in the future. The 12 permittees include the Rio Grande Water Conservation District (District); Alamosa, Conejos, Costilla, Mineral, Rio Grande, and Saguache counties; the municipalities of Alamosa, Del Norte, Monte Vista, and South Fork; and the Colorado Department of Natural Resources.

The permits would be issued with mandatory conditions, which are part of the proposed action. The activities that would cause the incidental take are actions proposed by the HCP permittees and residents of the San Luis Valley. Activities proposed to be covered by the permits include routine agriculture, community infrastructure, and riparian conservation and restoration (see Covered Activities listed below). These activities together with implementation of the proposed minimization, mitigation and monitoring measures may adversely affect flycatchers and their proposed critical habitat and may adversely affect cuckoos. District administration responsibilities, permit conditions, covered activities, mitigation, minimization, monitoring, and adaptive management measures are described below. Additional details of the proposed action and related activities can be found in the HCP and EA.

**District Administration:**

On behalf of the permittees, the District has committed to establish an appropriate level of staffing to administer the HCP. The primary responsibility for this staff position will be to ensure that the HCP is fully implemented including all adaptive management and monitoring measures.

Specifically, as described in sections 5.6 and 6.0 of the HCP and the Implementing Agreement, the District Administrator will:

- Oversee HCP implementation
- Provide staff support for HCP implementation
- Track impacts and identify mitigation credits
- Negotiate and secure landowner cooperative agreements, management agreements, or HCP-specific easement language
- Coordinate habitat quality monitoring on mitigation lands and reference sites
- Coordinate Valley-wide quantitative habitat mapping (every 10 years)
- Coordinate habitat enhancement activities as needed on mitigation lands to achieve and maintain mitigation commitments
- Coordinate the HCP steering committee
- Coordinate and implement education and outreach efforts
- Coordinate with county Land Use Administrators to implement procedure and remedies for impacts beyond the scope of the HCP
- Work with the Permittees, Federal agencies, and other partners to coordinate voluntary conservation efforts and to secure necessary funding
- Prepare annual HCP report for submission to the Service (with input from other permittees)

• Serve as a point of contact for agencies, landowners, and the general public
• Develop an annual work plan based on recommendations from the steering committee. The work plan will outline implementation commitments and priorities for the following year
• Other tasks, as needed.

**Permit Conditions:**

The complete texts of permit conditions appear in Appendix H of the HCP. Key provisions include:

1) The duration of permits are 30 years,
2) The permits are in effect for the flycatcher on the date the permits are signed and will be in effect for the cuckoo upon the date the species is listed (if listed),
3) Take of the flycatcher is permitted up to 6 adults and 12 eggs, nestlings, or fledglings in the form of harm and harassment through removal or alteration of 304.2 acres and implementation of the covered activities over the 30 year permit term. Take of the cuckoo is permitted up to 2 adults and 4 eggs, nestlings, or fledglings in the form of harm and harassment through removal or alteration of 304.2 acres and implementation of the covered activities over the 30-year permit,
4) The permits may be suspended if the permittees are not in compliance with the conditions of their permit or applicable Federal law or regulations, although suspension (or revocation) of one of the permits does not invalidate the other permits,
5) The permits may be revoked in accordance with applicable regulations and policies,
6) Changed circumstances are defined and measures are described that would be taken if such circumstances occur during the life of the permits,
7) Required notifications and procedures in the event of unforeseen circumstances are defined, including the No Surprises Policy, and
8) Procedures for amending and renewing the permits are set forth.

**Covered Activities:**

The covered activity categories include and are restricted to routine agriculture, community infrastructure, and riparian conservation and restoration. Activities *not* covered under these categories are also described in the HCP for clarity. Specific covered activities include but may not be limited to:

Routine Agriculture:
• Grazing,
• Fence construction and maintenance,
• Ditch clearing and maintenance,
• Water facility maintenance,
• New small-scale water facility construction, and
• Water management and administration.

Small Community Infrastructure:
• Vegetation removal from floodways,
• Levee construction and maintenance,

•Sediment removal,
• Infrastructure construction,
• Infrastructure maintenance, and
• Road and bridge maintenance.

Riparian Conservation and Restoration:
• Channel shaping and stabilization,
• Habitat creation and restoration,
• Weed management, and
• Wetland creation and management.

**Mitigation, Minimization, Monitoring, and Adaptive Management Measures:**

***Mitigation***

Mitigation (and minimization) measures for the flycatcher and cuckoo are addressed in combination because they will benefit both species as habitat requirements for cuckoos and flycatchers overlap to a large degree. Both species require blocks of dense riparian vegetation near open or subsurface water for foraging and nesting. In Colorado the differences in habitat requirements and use between the two species include: 1) Colorado flycatchers are often found in monotypic willow stands or willows mixed with small cottonwoods or tamarisk, but taller, overstory, cottonwoods are often nearby; 2) cuckoos appear to require a cottonwood overstory, most often with an understory of willows or other shrubs and; 3) flycatchers may use habitat patches as small as ¼ acre and as narrow as 30 feet but available information suggests cuckoos prefer habitat patches at least 10 acres in size and at least 325 feet wide.

Mitigation will be implemented with the following mitigation tools: (1) establishment of conservation easements, (2) habitat restoration or enhancement, (3) management agreements. The permittees, through the District, will seek landowners to enter conservation easements. Conservation easements may be perpetual or time-limited. Conservation easements that were established prior to issuance of the HCP permits will count as mitigation if they are located on non-federal lands in the plan area, have been purchased with funds from the District and/or the State of Colorado, and have documentation that they have been purchased, at least in part, to support HCP implementation. A Landowner Cooperative Agreement will accompany a conservation easement to:

1. Validate the landowner's participation in the HCP mitigation program,
2. Allow periodic access by the District or their representative for habitat monitoring, and by the Service for monitoring review,
3. Acknowledge the voluntary nature of the landowner's participation,
4. Contain standard liability, notification, and severability conditions
5. Contain additional habitat management provisions, if needed.

Habitat restoration, enhancement, or creation projects will require a management agreement to specify what actions are being taken and to allow for monitoring. A management agreement for maintenance of existing suitable habitat may also be written to allow monitoring of the habitat to

ensure that it has remained suitable. Enrollment of lands for mitigation will be on a voluntary basis. The permittees have committed to mitigate temporary impacts to habitat (270 acres) within five years of HCP implementation but permanent impacts to habitat (34.2 acres total estimated over permit duration) will be tracked and mitigated annually. Non-Federal land will be sought for mitigation as a priority but Federal land may be credited for mitigation in Federal/non-Federal partnerships for the non-Federal contribution. If a time-limited conservation easement expires or a landowner chooses to withdraw from the other two mitigation tools, the permittees, through the District administrator, will seek new landowners to enter one of the mitigation tools in order to maintain full mitigation for the permit duration. It is part of the administrator's job to track lands that can be credited to mitigation. Further information on eligibility and credit of lands can be found in the HCP.

***Minimization***

The following actions will minimize impacts to the flycatcher and cuckoo.

*Core Habitat Conservation*

The applicants will work with Federal and State land managers to seek their continued commitment to manage habitat for the flycatcher and cuckoo in areas known to harbor populations of the birds (core habitat) (see Section 5.4 of the HCP for further information).

*Community Outreach and Education*

Community outreach and education will occur through numerous contacts and venues with landowners in the Valley. This outreach and education will minimize impacts by:

1. Helping landowners and the community understand the value of riparian habitat;
2. Helping landowners, municipalities, and the community understand how they benefit from this HCP;
3. Encouraging landowners to participate in HCP mitigation efforts and general habitat conservation programs.
4. Providing landowners with access to technical and financial resources (including best management practices) that support habitat conservation and minimize impacts.
5. Reducing impacts to riparian habitat from activities that are outside the scope of the HCP coverage.
6. Continually gathering and disseminating new information and techniques on riparian conservation and enhancement.

*County HCP Enabling Language*

Each county will adopt a resolution, ordinance or other appropriate legal mechanism that documents and provides the authority to enable HCP implementation and permit protections for landowners within their jurisdiction. The language will affirm the incidental take protections for the covered activities that are included in the permits by defining county land use authority over typical and routine activities. The language will also establish a clear process for District and

county staffs to respond to complaints, inform landowners of their Endangered Species Act responsibilities, and potentially refer information regarding the impacts of non-covered activities to the Service. Model language is included in Appendix E of the HCP. A county may expand its land use controls or habitat protections at its own discretion.

*Conservation Support and Coordination*

Further minimization efforts include but may not be limited to:
• Improved partnerships between willing landowners and habitat enhancement efforts by the Natural Resource Conservation Service (NRCS), Partners for Fish and Wildlife, and other programs;
• Improved partnerships between willing landowners and land trusts to complete additional conservation easements that protect riparian habitat;
• Coordination with the establishment of the Rio Grande Natural Area, including planning and implementation, and potentially integrating the Natural Area into HCP implementation and;
• Additional Federal and State grant programs to facilitate ongoing riparian conservation (including Endangered Species Act Section 6 grants, North American Wetlands Conservation Act, and Great Outdoors Colorado (GOCO) grants).

***Monitoring***

The HCP administrator will be responsible for monitoring compliance with the terms and conditions of the permit and the effectiveness of minimization and mitigation measures throughout the permit's 30-year duration. The goal for monitoring efforts is to assess habitat conditions and population status. Specific monitoring goals include Valley-wide habitat quantity monitoring, parcel-specific habitat quality monitoring, and species occurrence monitoring as further described below.

*Valley-wide (macro) habitat quantity mapping*

This mapping will be updated every 10 years based on aerial photo interpretation, or the most reasonably current and affordable mapping or remote sensing technology. The macro habitat monitoring will include the quantity of woody riparian habitat with the HCP boundary and within mitigation parcels as well as the ratio of tree/shrub habitat.

Every 10 years, this revised habitat mapping will be used to track landscape-scale habitat changes and trends, revisit impact assumptions and calculations for the covered activities, and revise subsequent mitigation requirements (as needed).

Core Habitat Monitoring

A key part of the habitat-based monitoring will be the establishment of reference sites on Federal and State lands that are known, or are believed, to support the covered species (core habitat). These references areas will:

- Establish a baseline of habitat condition on lands that are managed to support native wildlife, including the covered species, and have been documented to provide habitat;

- Track long-term changes in habitat composition in core habitat areas on Federal and State lands;
- Track the effectiveness of habitat management and restoration efforts on Federal and State lands;
- Facilitate implementation of micro-habitat monitoring protocol consistently across Federal, State, and mitigation lands; and
- Provide a point of reference from which to compare habitat quality on mitigation lands.

Overall, the reference sites will be valuable in determining the suitability of potential or existing mitigation lands. As habitat conditions and quality change over time, these sites will help determine whether habitat variability (positive or negative changes) on mitigation lands is consistent with variability on Federal and State lands. The reference sites also will be valuable in identifying regional circumstances that are outside the control of the Permittees, and that are more appropriately addressed under *Changed Circumstances* as described in the HCP.

*Parcel-specific (micro) habitat quality evaluation*

The cornerstone of the mitigation approach for this HCP is the conservation and enhancement of a sufficient number of acres of riparian habitat at a specified level of habitat quality (see Section 5.0 in the HCP). A key component of this approach is monitoring mitigation lands to ensure that sufficient habitat quality is maintained. Microhabitat monitoring will be conducted on mitigation lands to quantify and evaluate if the quantity and quality of habitat is improving or degrading. Microhabitat monitoring will consist of the following:

- Parcel- or area-specific vegetation mapping based on the National Vegetation Classification System or other comparable system,
- Habitat sampling to determine stand structure, cover, density, and species composition,
- Determining encroachment of invasive plant species and,
- Photo documentation of typical habitat conditions from defined locations.

Habitat sampling measurements will be incorporated into a Habitat Quality Index (HQI) that will determine the function and value (i.e., quality) of the habitat in providing the life requisites of covered species, as described in recovery plans or scientific literature (for further information see Appendix G in the HCP). Habitat monitoring of all mitigation lands will be conducted on a rotating basis once every three years, and compared with baseline data and selected reference areas. Habitat quality on mitigation lands will be considered compliant with the HCP criteria if the HQI value is equal or greater than baseline or the reference area; whichever is lower. The HQI will be evaluated after the initial monitoring of mitigation and reference lands (within five years), and will be revised as necessary by the steering committee to ensure its effectiveness (see Adaptive Management section in HCP).

Restoration Monitoring

Habitat restoration or enhancement efforts may be used to increase the size or improve the quality of mitigation lands. Restoration efforts also may be used individually for mitigation, once preliminary success can be demonstrated. In either case, the HQI monitoring described above will be used to evaluate the quality of the restored areas and their suitability for mitigation. The success of restoration will be determined by documenting that the restored habitat is progressing towards developing the habitat characteristics needed to support covered species (suitability). For further information refer to section 5.0 of the HCP.

*Species occurrence monitoring*

A steering committee will be set up to guide the HCP process and assist the District with species-specific monitoring actions for the flycatcher and cuckoo. The objectives of species-specific surveys are to conduct habitat occupancy surveys (presence/absence) in suitable habitat for flycatchers and cuckoos.

Southwestern Willow Flycatcher

Flycatcher surveys will be conducted within core habitat areas and on mitigation lands once every three years as follows:

- General surveys (under the 2010 survey protocol (Sogge et al. 2010)) within core habitat areas on public lands will be conducted by Federal and State agencies responsible for managing the core habitat areas,
- Surveys on private mitigation lands will consist of a single callback survey conducted by the District in June or July during habitat monitoring and,
- Reports summarizing the findings of the surveys on both public and private lands will be submitted to the District and HCP administrator by the end of the calendar year. Refer to the HCP for further information.

Western Yellow-billed Cuckoo

Surveys for cuckoos will be conducted simultaneously with flycatcher surveys described above. The surveys will follow the most current cuckoo survey protocol approved or accepted by the Service. The reporting of survey findings will be the same as described above.

***Adaptive Management***

*Monitoring Evaluation*

Any need for adaptive management will be based on annual reports and data gathered from monitoring and new research as it becomes available. The results of monitoring will be reviewed annually during the first six years by the steering committee. After the first six years of the permit, the results of monitoring will be reviewed every three years

by the steering committee. After three years, the first round of monitoring data for each location (reference sites and mitigation lands) will be used to establish baseline conditions for monitoring. This first round of monitoring data also will provide the first opportunity to comprehensively evaluate HQI results and develop guidelines for habitat quality levels that are suitable for mitigation (based on overall conditions and a comparison to reference sites). If monitoring in subsequent years indicates that a mitigation area does not meet suitability guidelines, one or more of the following adaptive management procedures will be initiated:

- Increase monitoring to determine the cause of the habitat decline, and potential remedies,
- Work with landowners to implement management or restoration measures to improve habitat quality (e.g., fencing, irrigation changes, planting, or others),
- Remove the parcel/area from the mitigation pool and substitute with another parcel of sufficient size and quality and,
- Retain the parcel/area in the mitigation pool, but at a reduced credit value (with the credit shortfall replaced by another parcel).

Management or restoration measures to improve habitat quality on mitigation lands will be reevaluated after three years. If, after three years, habitat conditions have failed to improve, the area will no longer be eligible for mitigation credit and will be replaced by additional mitigation lands. (Any such area may become reenrolled as mitigation land at a later date if it is demonstrated that habitat quality standards have been achieved.)

*Evaluation of Impact Assumptions*

As described above under *Monitoring*, the District will update Valley-wide riparian habitat mapping every 10 years. Over time, acreage of woody riparian habitat in the Valley may expand or contract as a result of climate conditions, restoration and enhancement efforts, or changes in water management and agricultural practices. For example, riparian restoration and enhancement efforts would be expected to increase acreage of woody riparian habitat but changes to water management or agricultural practices could contract the extent of riparian habitat or the practices could shift from one place to another in the Valley resulting in no Valley-wide gain or loss of habitat. After updated habitat mapping is completed, the District will revisit assumptions and data used to estimate the impacts of the covered activities. If this evaluation of new information demonstrates that the habitat acres in the Valley or impact assumptions have changed (resulting in greater or fewer impacts), the mitigation requirements for this HCP will be adjusted accordingly.

**Additional Assurances and Changed and Unforeseen Circumstances**

Two primary goals of the Service's HCP program are: "(1) adequately minimizing and mitigating for the incidental take of listed species; and (2) providing regulatory assurances to section 10 permittees that the terms of an approved HCP will not change over time, or that necessary changes will be minimized to the extent possible, and will be agreed to by the applicant" (HCP Handbook – Service and NMFS 1996). Recognizing the importance of both of

these goals, the Service has adopted the "No Surprises" Policy, which addresses responsibilities for conservation and mitigation measures in response to changed or unforeseen circumstances affecting species that are covered by a permit (50 CFR 17.22(b)(5) and (6), and 17.32(b)(5) and (6)).

**Changed Circumstances**

The Act's implementing regulations define "changed circumstances" as "changes in circumstances affecting a species or geographical area covered by a conservation plan or agreement that can reasonably be anticipated by plan or agreement developers and the Service and that can be planned for" (50 CFR § 17.3).

In developing this HCP, the Permittees and the Service have identified the potential "changed circumstances" that can reasonably be anticipated to affect the covered species and plan area, and have agreed upon the Permittees responsibility under this HCP to implement conservation and mitigation measures to address such changed circumstances should they occur during the term of this HCP. A list of the reasonably anticipated changed circumstances follows. Further information can be found in section 7.4 of the HCP.

1. Habitat loss from floods, prolonged drought, fire, or other naturally occurring events or processes;
2. Habitat loss due to long-term climate change;
3. Habitat loss or changes from invasive species;
4. Habitat loss from development or other non-covered activities;
5. Small changes in habitat or impact assumptions;
6. Downlisting or delisting of covered species due to recovery efforts;
7. Critical habitat designation for species covered by this HCP (including potential future changes or amendments to the Act's critical habitat provisions);
8. Future listing of a non-listed covered species;
9. New listing of additional riparian species;
10. Withdrawal by local units of government;
11. Withdrawal by one or more of the counties;
12. Withdrawal by the State and;
13. Withdrawal or elimination of the Rio Grande Water Conservation District.

Other than the "changed circumstances" specifically identified, all other changes in circumstances affecting covered species shall be deemed "unforeseen circumstances," as described below.

**Unforeseen Circumstances**

In the event that significant "unforeseen circumstances" occur during the life of the permit, adjustments to this HCP may be proposed by either the Permittees or the Service to address those circumstances. The Service and Permittees would work together to redirect resources to address unforeseen circumstances. Notwithstanding the foregoing, however, so long as the Permittees are in good faith implementing this HCP, the Service shall not:

a) Require the commitment of any additional land, water, or financial compensation by the Permittees, partners, or covered landowners in this HCP; or

b) Impose additional restrictions on the use of land, water, or natural resources otherwise available for use by the Permittees, partners, or covered landowners in this HCP under the original terms of this HCP.

STATUS OF THE SPECIES

**Southwestern Willow Flycatcher**

The flycatcher was listed as endangered, without critical habitat on February 27, 1995 (USFWS 1995). The primary reason for listing was loss and modification of habitat from actions such as dam and reservoir creation and operation, water diversions, groundwater pumping, channelization and bank stabilization, riparian vegetation removal, livestock grazing, and recreation. Loss or modification of habitat results in less space for breeding, feeding, and sheltering.

Critical habitat was later designated on July 22, 1997 (USFWS 1997a). A correction notice was published in the Federal Register on August 20, 1997 to clarify the lateral extent of the designation (USFWS 1997b).

On May 11, 2001, the 10th Circuit Court of Appeals set aside designated critical habitat in those states under the 10th Circuit's jurisdiction (New Mexico). The Service decided to set aside critical habitat designated for the flycatcher in all other states (California and Arizona) until it could re-assess the economic analysis.

On October 19, 2005, the Service re-designated critical habitat for the flycatcher (USFWS 2005a). A total of 737 river miles, and acreage within the lateral extent of the 100-year floodplain, was designated across southern California, Arizona, New Mexico, southern Nevada, and southern Utah. Critical habitat was excluded from designation in the San Luis Valley in 2005 based on development of the HCP and other conservation partnerships in the Valley.

However, on October 2, 2008, a complaint was filed claiming the 2005 rule was arbitrary and capricious and contrary to the Endangered Species Act and the Administrative Procedures Act. Subsequently, on January 14, 2010, the Court adopted a settlement agreement where the Service voluntarily agreed to a remand of designation of critical habitat. A proposed rule date of July 31, 2011, was included in the settlement agreement with a final designation date of July 31, 2012, but the final designation date was subsequently modified to December 15, 2012. On August 15, 2011, the Service published the proposed rule that included proposed critical habitat units in the San Luis Valley (as well as in the San Juan Basin in Colorado and other States) (USFWS 2011).

A final recovery plan for the flycatcher was signed and released to the public in August 2002 (USFWS 2002a). The recovery plan describes the reasons for endangerment, current status of the flycatcher, addresses important recovery actions, includes detailed issue papers on management issues, and provides recovery goals. Recovery is based on reaching numerical and

habitat related goals for each specific Management Unit established throughout the subspecies range and establishing long-term conservation plans (USFWS 2002a).

The flycatcher is a small grayish-green passerine bird (Family Tyrannidae) measuring approximately 5.75 inches. The song is a sneezy "fitz-bew" or a "fit-a-bew", the call is a repeated "whitt." It is one of four currently recognized willow flycatcher subspecies (Phillips 1948, Unitt 1987, Browning 1993). It is a neotropical migrant that breeds in the southwestern U.S. and migrates to Mexico, Central America, and possibly northern South America during the non-breeding season (Phillips 1948, Stiles and Skutch 1989, Peterson 1990, Ridgely and Tudor 1994, Howell and Webb 1995). The historical breeding range of the flycatcher included southern California, Arizona, New Mexico, western Texas, southwestern Colorado, southern Utah, extreme southern Nevada, and extreme northwestern Mexico (Sonora and Baja) (Unitt 1987).

The flycatcher breeds in dense riparian habitats from sea level in California to approximately 8,500 feet in Arizona and southwestern Colorado. Historical egg/nest collections and species' descriptions throughout its range describe the flycatcher's widespread use of willow (*Salix* spp.) for nesting (Phillips 1948, Phillips et al. 1964, Hubbard 1987, Unitt 1987, San Diego Natural History Museum 1995). Currently throughout their range, flycatchers primarily use Geyer willow (*S. geyeriana*), coyote willow (*S. exigua*), Goodding's willow (*S. gooddingii*), box elder (*Acer negundo*), saltcedar (*Tamarix* sp.), Russian olive (*Elaeagnus angustifolio*), and live oak (*Quercus agrifolia*) for nesting. Other plant species less commonly used for nesting include: buttonbush (*Cephalanthus* sp.), black twinberry (*Lonicera involucrata*), cottonwood (*Populus* spp.), white alder (*Alnus rhombifolia*), blackberry (*Rubus ursinus*), and stinging nettle (*Urtica* spp.). Based on the diversity of plant species composition and complexity of habitat structure, four basic habitat types can be described for the flycatcher: monotypic willow, monotypic exotic, native broadleaf dominated, and mixed native/exotic (Sogge et al. 1997).

The flycatcher's habitat is dynamic and can change rapidly: nesting habitat can grow out of suitability; willow habitat can develop from seeds or root sprouts to suitability in five years; heavy runoff can remove/reduce habitat suitability in a day; or river channels, floodplain width, location, and vegetation density may change over time. The flycatcher's use of habitat in different successional stages may also be dynamic. For example, over-mature or young habitat not suitable for nest placement can be occupied and used for foraging and shelter by migrating, breeding, dispersing, or non-territorial flycatchers (McLeod et al. 2005, Cardinal and Paxton 2005). That same habitat may subsequently grow or cycle into habitat used for nest placement. Flycatcher habitat can quickly change and vary in suitability, location, use, and occupancy over time (Finch and Stoleson 2000).

There were 275 known flycatcher breeding sites in California, Nevada, Arizona, Utah, New Mexico, and Colorado (all sites from 1993 to 2005 where a territorial flycatcher has been detected) holding an estimated 1,214 territories (Durst et al. 2006). It is difficult to arrive at a grand total of flycatcher territories since not all sites are surveyed annually. Numbers have increased since the species was listed and some habitat remains unsurveyed; however, after nearly a decade of intense surveys, the existing numbers are just past the upper end of Unitt's (1987) estimate of 20 years ago (500-1000 pairs). About 50 percent of the 1,214 territories

estimated throughout the subspecies range are located at four general locations (Cliff/Gila Valley – New Mexico, Roosevelt Lake - Arizona, San Pedro River/Gila River confluence – Arizona, Middle Rio Grande, New Mexico).

***Proposed Critical Habitat***

The physical or biological features and primary constituent elements of critical habitat are based on riparian plant species, structure and quality of habitat, and insects for prey. A variety of river features such as broad floodplains, water, saturated soil, hydrologic regimes, elevated groundwater, and fine sediments help develop and maintain habitat.

The physical or biological features of proposed critical habitat include:

1. Space for individual and population growth and normal behavior;
2. Food, water, air, light, minerals, or other nutritional or physiological requirements;
3. Cover or shelter and;
4. Sites for breeding, reproduction, or rearing (or development) of offspring.

The primary constituent elements include:

1. Riparian vegetation and;
2. Insect prey populations.

***Previous Consultation***

Since its listing in 1995, 211 Federal agency actions have undergone formal section 7 consultation throughout the flycatcher's range. Although many recovery actions are underway, activities continue to adversely affect the distribution and extent of all stages of flycatcher habitat throughout its range (i.e., development, urbanization, grazing, recreation, native and nonnative habitat removal, dam operations, river crossings, ground and surface water extraction). Stochastic events also continue to change the distribution, quality, and extent of flycatcher habitat.

**Yellow-billed Cuckoo**

The cuckoo is a candidate species under the Act (USFWS 2002b). In response to a petition to list the species submitted in February 1998, we issued a 12-month finding on July 25, 2001, that determined listing of the species is warranted but is precluded by higher priority listing actions for the cuckoo western distinct population segment (USFWS 2001).

The cuckoo is a medium-sized, slender bird (about 12 inches in length and weighing about 2 ounces) of the Family Cucilidae, whose members are characterized in part by zygodactyl feet (meaning two toes point forward and two backward). The species has a slender, long-tailed profile, with a fairly stout and slightly down-curved bill which is blue-black with yellow on the base of the lower mandible. Plumage is grayish-brown above and white below, with rufous primary flight feathers. The tail feathers are boldly patterned with black and white below. The legs are short and bluish-gray, and adults have a narrow, yellow eye ring. Juveniles resemble

adults, except the tail patterning is less distinct, and the lower bill may have little or no yellow. Males and females differ slightly, as males tend to have a slightly larger bill.

The cuckoo has been associated with cottonwood (*Populus* spp.)-willow (*Salix* spp.) dominated riparian habitats but uses other habitats in some parts of its range (Hamilton and Hamilton 1965, Gaines 1974, Gaines and Laymon 1984, Laymon and Halterman 1986, 1987, 1989, Halterman 1991, Halterman and Laymon 1994, 1995). In addition, cuckoos have been found to utilize a mixture of tamarisk (*Tamarix* spp.) and cottonwood/willows (Corman and Magill, 2000). Gaines (1974) found that vegetative density, distance to water, and the length and width of the habitat area were important characteristics when surveying for cuckoos. Western yellow billed cuckoos breed in large blocks of riparian habitats (particularly woodlands with cottonwoods and willows). Dense understory foliage appears to be an important factor in nest site selection, while cottonwood trees are an important foraging habitat in areas where the species has been studied in California (Halterman 1991). Use of Russian olive stands has been documented in Colorado (Beason, RMBO, pers. comm. 2012).

The cuckoo arrives on the breeding grounds beginning in mid-to late May (Franzreb and Laymon 1993). Nesting activities usually take place between late June and late July, but may begin as early as late May, and continue to late August, depending on the season. Nest building takes 2-4 days. Nests are typically built in willow or other shrub thickets 4 to 10 feet (but as high as 35 feet) above the ground, are usually well-hidden by foliage, and are almost always near water. Incubation begins as soon as the first egg is laid and lasts 11 days. Clutch size is usually four eggs but may be between 1-8 eggs and development of the young are very rapid, with a breeding cycle of 17 days from egg-laying to fledging young (Ehrlich et al. 1988). The young are fed large food items such as green caterpillars, tree frogs, katydids, and grasshoppers for the 6-7 day nestling period. After fledging the young are dependent on the adults for at least 2 weeks.

Historically, the cuckoo occupied and bred in riparian zones from western Washington (possibly southwestern British Columbia) to northern Mexico, including Oregon, Washington, southwestern Idaho, California, Nevada, Utah, western Colorado, Arizona, New Mexico, and western Texas (American Ornithologists' Union 1998). Today, the species is absent from Washington, Oregon, and most of California, is likely extirpated in Nevada, is rare in Idaho and Colorado, and occurs in the balance of its range in riparian habitats that are much reduced from their previous extent and are heavily affected by human use (USFWS 2001).

Principal causes of riparian habitat losses are conversion to agricultural and other uses, dams and river flow management, stream channelization and stabilization, and livestock grazing. Available breeding habitats for cuckoos have also been substantially reduced in area and quality by groundwater pumping and the replacement of native riparian habitats by invasive nonnative plants (particularly tamarisk) (Groschupf 1987; Rosenberg et al. 1991). Estimates of riparian habitat losses in the west as a result of the factors described above range from 90 to 99 percent in California, 90 percent in New Mexico, and 90 to 95 percent in Arizona (USFWS 2001). Arizona is thought to contain the largest remaining cuckoo population in the western states (USFWS 2002b).

In Colorado west of the Continental Divide, the species was probably never common (Bailey and Niedrach 1965, pp. 404–406) and is now extremely rare (Kingery 1998, pp. pp. 204–205). Within the range of the western DPS, yellow-billed cuckoos were found along the Colorado River in Palisade, near Grand Junction (Mesa County) annually through the 1950s and 1960s (Righter *et al.* 2004, p. 82). Cuckoos were also regularly detected as recently as the mid-1980s along the Uncompahgre and Gunnison Rivers near Delta (Delta County) (Beason 2010, p. 1).

In 1998, the Colorado Breeding Bird Atlas (Kingery 1998, pp. 204–205) gave the general status of the yellow-billed cuckoo in Colorado as nearly extirpated in the western half of the State. During the 1987 to 1994 period covered by the Atlas, only three cuckoos were recorded on the western slope, with one confirmed nesting observation that occurred along the Yampa River near Hayden in 1988. Other confirmed nesting records (mid-1980s) were associated with outbreaks of caterpillar infestations in box elders in the Four Corners Region/Durango area (Colyer 2001, pp. 1–6). National Park Service surveys in southwest Colorado from 1988 through 1995 for the Colorado Bird Breeding Atlas provided no records of yellow-billed cuckoo.

In 1998, biologists conducted focused yellow-billed cuckoo surveys along 242 mi of lowland river riparian habitat along six rivers in west-central Colorado. They found one probable nesting pair along the Colorado River near Clifton (southeast side of Grand Junction) (Dexter 1998, p. 3). Reports of single yellow-billed cuckoos have come primarily from the Grand Junction area and Mesa County in 2001, 2002, 2005, 2008, and 2011, with a report of more than one cuckoo at Orchard Mesa Wildlife Area in 2006 (Beason 2010, p. 1; Beason 2012, p. 5). Additional reports include a cuckoo south of Montrose in Montrose County near the Uncompahgre River in 2009, a cuckoo along the Gunnison River near Gunnison in 2007 (Beason 2010, p. 1), and detections by the Rocky Mountain Bird Observatory along the Yampa River near Craig in 2007 and 2008, and in far western Colorado near Nucla in 2005 and 2008 (Beason 2010, p. 1). Surveys repeated near Craig and Nucla in 2009 failed to detect birds. Since 2003 cuckoos have also been detected annually along the North Fork of the Gunnison River in Delta County; breeding was confirmed in 2008 and again in 2011 near Hotchkiss (Beason 2010, p. 1; Beason 2012, p. 5). Surveys by the Rocky Mountain Bird Observatory in 2010 were conducted near historical detections and at sites with suitable habitat in Archuleta, Conejos, Montezuma, and Rio Grande counties in south-central and southwest Colorado but no cuckoos were detected (Beason 2010, p. 2). In 2011 three cuckoos were detected on the Rio Grande near the town of Del Norte (Rawinski 2011a). Two cuckoos were also confirmed on the Conejos River in 2011 (Rawinski 2011b). In 2012 a dead cuckoo was found at a residence adjacent to the Yampa River east of Craig (Skorkowsky, USFS, pers. comm. 2012). Upon examination, the cuckoo was determined to be male and appeared to be a breeding resident (Carling, UWY, pers. comm. 2012). Survey results and available literature for the cuckoo in Colorado indicate that there are 9 or fewer breeding pairs in Colorado. Existing data indicate that rangewide there is a minimum of 680 pairs in the US and Mexico (Laymon, USFWS, pers. comm. 2012).

## ENVIRONMENTAL BASELINE

The environmental baseline includes past and present impacts of all Federal, State, or private actions in the action area, the anticipated impacts of all proposed Federal actions in the action area that have undergone formal or early section 7 consultation, and the impact of State and

private actions which are contemporaneous with the consultation process. The environmental baseline defines the current status of the species under consultation and their habitat to provide a platform from which to assess the effects of the action now under consultation.

The "action area" means all areas to be affected directly or indirectly by the action and not merely the immediate area involved in the action. Indirect effects are those that are caused by the action and are later in time, but are still reasonably certain to occur (50 CFR 402.02). All covered activities and all mitigation will take place within the boundaries of the HCP area (the Plan area). The Plan area includes six counties on the Valley floor of the San Luis Valley (all of the six counties are applicants to the HCP). The Plan area generally follows the boundary of U.S. Forest Service land surrounding the Valley on the west, north and east side of the Valley with the New Mexico border forming the southern boundary. The U.S. Forest Service boundary approximates an elevational limit of about 8,500 feet although the elevational limit goes up to about 9,000 feet in Mineral County. None of the activities have indirect effects outside of the Plan area. Consequently, the action area is the Plan area. All land ownerships are included in the Plan/action area. Although activities on Federal land will have to undergo section 7 consultation (if they may affect the covered species or their habitat) and, therefore, are not covered activities, Federal lands are included in the Plan/action area and the larger Federal lands form the core habitats, as described in the HCP, that support a large number of flycatchers and habitat in the Valley. The Federal lands are also intended to be used as reference sites for monitoring purposes and can possibly be used for mitigation for any non-federal contribution of enhancement or restoration projects. Consequently, Federal lands were not removed from the Plan/action area.

**Water facility construction and maintenance**

Beginning in the mid-1800s, the construction of ditches and canals to support irrigated agriculture in the Valley has shaped the current economic and ecological conditions. The ongoing management of ditches, diversions, and other water management facilities has allowed these economic and ecological conditions in the Valley to persist over time. It is likely that water facility construction and maintenance has removed riparian vegetation in some areas that provided habitat for the flycatcher and cuckoo.

**Water rights management and administration**

Under direction of the 1938 Rio Grande Compact and Colorado Water Law, the State Engineer's Office and individual landowners and entities have administered water rights and water deliveries in the Valley for nearly 100 years. These activities, which are always responding to changing runoff conditions, have shaped the current economic and ecological conditions in the Valley. Water management likely limited the amount of riparian habitat available to the flycatcher and cuckoo in some areas but provided some suitable riparian habitat in areas it didn't use to occur at due to distribution of water in new areas.

**Agricultural Management**

The management of land for both crop and livestock production, supported by the water

management systems described above, have shaped the current land use, economic, and ecological context of the Valley. It is likely that both crop and livestock production reduced the amount of riparian habitat available to the flycatcher and cuckoo.

**Mosquito Control**

The Alamosa Mosquito Control District (AMCD) conducts mosquito monitoring and control. Several smaller jurisdictions also administer mosquito control measures. While each entity has its own mosquito control program, the control methods that are used generally include monitoring with live traps and spraying from trucks or other vehicles, airplanes, and backpack units. Chemical application includes both larvacides and adulticides. The frequency of this activity varies from year to year depending on precipitation and monitoring results – in some years there has been no spraying, while in others the riparian corridor has been sprayed somewhat frequently. Whenever possible, the AMCD has tried to avoid spraying within the Rio Grande riparian zone to avoid any potential habitat impacts. Other measures to reduce environmental impacts include the use of minimal chemical application rates, and timing applications to reduce exposure to non-target insects and wildlife (Teyler 2005, 2008).

Monitoring of mosquitoes is not expected to impact the covered species or their habitat. The application of larvacides would not likely impact the covered species or their habitat because larvacides are target-specific and mosquitoes are not a significant food source for the flycatcher or cuckoo. However, adulticide application may kill other insects in addition to mosquitoes, which can reduce the available food supply for flycatchers and cuckoos. While the direct effects of mosquito control on non-target wildlife are uncertain, it is believed that adulticide use within riparian habitat could reduce the insect prey base for flycatchers or cuckoos in very localized areas. However, based on the best available information, approximately the same numbers of flycatchers and cuckoos have inhabited the same areas over a number of years. Consequently, we find that mosquito control has not affected flycatchers and cuckoos.

**Infrastructure development and management**

The development of towns and cities in the Valley, along with associated infrastructure, such as roads, railroads, and utilities, are part of the current conditions. The development has likely reduced riparian habitat for the species particularly for linear projects.

**Conservation and restoration activities**

Public and private land and habitat conservation efforts, ranging from the establishment of NWRs to recent conservation easements and restoration projects, are important actions that have shaped the land use, ecological, and socioeconomic context of the Valley. These efforts have benefitted the flycatcher and cuckoo by preserving important habitat.

**National Wildlife Refuge Management**

The 2003 Comprehensive Conservation Plan (CCP) for the Alamosa and Monte Vista NWRs directs the Service to provide "dense multilayered native riparian vegetation" for the flycatcher

and other species, and to protect sufficient habitat for the flycatcher (USFWS 2003). Baca NWR is currently managed under a Conceptual Management Plan (USFWS 2005b). The Service has recently initiated a multiyear planning process to develop an updated CCP for the three NWRs in the Valley. Until that process is completed, the Service will continue to manage the NWRs under their existing plans and directions. The riparian habitat that exists on the NWRs has provided suitable habitat for the flycatcher (cuckoos not known from the NWRs).

**San Luis Valley Conservation Area Land Protection Plan Implementation**

The Service's National Wildlife Refuges program recently released a draft Land Protection Plan (LPP), and associated NEPA environmental assessment (USFWS 2012b), that proposed to establish the San Luis Valley Conservation Area, which included the Rio Grande watershed in Colorado and small portions of northern New Mexico. The Service proposed to use conservation easements and land purchases from willing landowners to protect wildlife habitat and maintain wildlife corridors for several identified species (including the flycatcher and cuckoo) (USFWS 2012c). There has currently been no effect to the flycatcher or cuckoo as a result of this effort.

**Status of Covered Species and Proposed Critical Habitat within the Action Area**

***Southwestern Willow Flycatcher***

Much of the San Luis Valley is private land and little has been inventoried. Suitable habitat on Federal and State land has been surveyed but the last relatively comprehensive survey in the San Luis Valley was in 2007. During that year 56 territories were documented on Federal and State lands, which exceeded the recovery goal of 50 territories. In total 66 territories were recorded in Colorado in 2007 with the other 10 in the San Juan River Basin (Durst et al. 2008).

***Southwestern Willow Flycatcher Proposed Critical Habitat***

Proposed critical habitat in the San Luis Valley of Colorado includes a 99.0 mi unit constituting 57,650 ac of the Rio Grande and a 43.4 mi unit constituting 23,352 ac of the Conejos River. Proposed critical habitat includes areas with herbaceous and woody vegetation. Thus acreages for proposed critical habitat are greater than acreages of woody riparian vegetation in the Valley. Federal, State, and private land occur on these units. Both units are entirely within the Plan/action area. The upstream limit of proposed critical habitat on the Rio Grande is at the Hanna Lane/County Road 17 crossing of the Rio Grande in Rio Grande County west of Del Norte. The downstream limit is at the County Road G crossing on the Costilla/Conejos county line approximately 5 air miles north of the New Mexico border. The upstream limit of proposed critical habitat on the Conejos River is just east of Fox Creek Village at the County Road D.5 crossing in Conejos County. The downstream limit is at the confluence with the Rio Grande.

***Yellow-billed Cuckoo***

Cuckoos have been detected annually since 2001 in the San Luis Valley of south-central Colorado in Conejos County where breeding is suspected, but not confirmed (Beason 2010,). Surveys conducted on the Rio Grande near Del Norte in Rio Grande County in 2008 and 2011

found at least 3 cuckoos (Wildlife Specialties, LLC, 2008; Rawinski 2011a). Two cuckoos at different locations were also confirmed on the Conejos River in 2011 (Rawinski 2011b).

## EFFECTS OF THE ACTION

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action, which will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

### Effects to Southwestern Willow Flycatcher

Routine agricultural practices such as grazing can result in degraded or reduced extent of habitat by browsing and trampling of habitat or increased chance of subsequent erosion that may remove habitat. Annual grazing may keep habitat below the height or density required for the flycatcher. Fence construction and maintenance can permanently or temporarily remove and bisect habitat. Ditch clearing and maintenance or other water facility maintenance and new water facility construction can also permanently or temporarily remove habitat. Water management can reduce water occurring in natural waterways or manmade canals and ditches that was previously available to develop riparian and wetland areas. However, it may create some habitat in areas previously without riparian or wetland habitat through distribution of water to new areas.

Small community infrastructure projects such as vegetation removal from floodways and infrastructure construction and maintenance such as levees, bridges, and roads will permanently or temporarily remove riparian habitat beneficial to the flycatcher. Sediment removal will prevent establishment of soils that support willows or other riparian habitat and equipment used during sediment removal may permanently or temporarily crush vegetation and alter habitat.

Riparian and wetland conservation activities such as restoration, creation, channel shaping, channel stabilization, and other management activities may be beneficial in the long run but will have short-term temporary and perhaps permanent impacts to riparian habitat. Weed management will also be beneficial but may have short-term impacts through removal of cover, removal of insect production (foraging) areas, and may disturb birds during implementation.

Implementation of the covered activities over the 30-year life of the permit is expected to result in temporary modification of habitat or permanent modification or loss of habitat. Temporary habitat modification of 270 acres is expected through some of the covered activities. Riparian/willow habitat modified by actions such as cutting or burning along irrigation ditches is expected to grow back to suitable habitat within about 3 years. Because the habitat modification is expected to take place primarily in marginal habitat, have small acreage impacted, and be dispersed, there should be habitat available near covered activities that displaced flycatchers can occupy. Flycatchers should be able to use the temporarily modified habitat after about 3 years with little effect to individual flycatchers and the population in the Valley. Permanent habitat

loss or modification due to covered activities over the permit term is expected to be very small (30.4 acres) and is expected to also be in small and dispersed areas. The quantity of nesting habitat that currently occurs and will be maintained through mitigation is sufficient to meet the recovery goals outlined for the San Luis Valley Recovery Unit as prescribed in the flycatcher recovery plan (USFWS 2002a). Furthermore, mitigation proposed in the HCP is consistent with the flycatcher recovery plan

Despite enough habitat to meet recovery goals in the Valley, loss or alteration of habitat through implementation of the covered activities can take the birds by reducing area available for breeding, feeding, and shelter resulting in loss of adult flycatchers. Loss of nests during project implementation can directly take eggs, nestlings, or dependent fledglings. Disturbance during implementation of covered activities can also occur resulting in nest abandonment and death of eggs, nestlings, or dependent fledglings.

Very little habitat on private land in the Valley has been surveyed for the flycatcher but with pockets of occupied habitat scattered throughout the Valley it is likely that some suitable habitat that will be impacted by covered activities will be occupied by flycatchers. Overall, the extent of temporary or permanent habitat loss is only about 2 percent of available woody riparian flycatcher habitat in the Valley. It is highly unlikely that all habitat expected to be impacted by the covered activities is occupied and it is expected that covered activities will primarily take place in marginal habitat. Consequently, we expect that only 10 percent of the habitat will be occupied. Therefore, the take of adult flycatchers is calculated by dividing the total estimated amount of habitat affected by the covered activities (304.2 acres) by the average territory size (11 acres) resulting in 28 territories. Multiplying 28 territories by 10 percent results in 2.8 territories. Rounding up to the nearest whole number results in anticipated take of 3 territories. Assuming all territories have breeding pairs, it is anticipated that 6 individual adults will likely be taken by the covered activities. The removal or alteration of habitat by covered activities harms adults by reducing habitat available for breeding, feeding, and sheltering, which can affect reproduction efforts and indirectly effect individual birds by reducing food and cover necessary to sustain the flycatcher. The anticipated take of territories is only 0.2 percent of the number of territories rangewide.

Covered activities taking place in nesting areas will likely scare away adult flycatchers but immobile or less mobile eggs, nestlings, or dependent fledglings could be injured or killed causing take at these life stages. The typical clutch size of a nest is 3-4 eggs (Sogge et al. 2010). Therefore, we assume the 3 territories would each have one nest and each nest could have 4 eggs, resulting in an anticipated take of 12 eggs, nestlings, or dependent fledglings by the covered activities. The form of take is either direct take by destroying eggs, nestlings, or dependent fledglings or through harassment such that adults do not return to the nest site and eggs, nestlings or fledglings die as a result.

***Effects of Flycatcher Mitigation and Minimization Measures***

Mitigation and minimization measures were designed to offset, to the maximum extent practicable, the effects of the covered activities to the flycatcher. To offset these effects, the HCP proposes a comprehensive mitigation program consisting of protection of land and

maintenance, restoration or enhancement of riparian vegetation. These mitigation measures address the impacts to an estimated 30.4 acres permanently impacted and an estimated 270 acres temporarily impacted on an average annual basis over the life of the permit. Additionally, community outreach and education and county land use ordinances will minimize impacts to the flycatcher and its habitat.

Although mitigation will greatly benefit the species, implementation of mitigation measures has some potential to harm or harass flycatchers. Activities such as habitat restoration or enhancement may remove or damage small amounts of habitat, or could disturb nearby flycatchers resulting in harassment. Protocols for avoiding or reducing these effects, to the extent possible, will be built into the management plans for properties participating in mitigation.

***Summary of the Effects to Flycatchers***

Over the 30-year term of the permit, and considered in addition to baseline conditions, the flycatcher should benefit from implementation of the HCP. Protection and management of riparian habitats will improve the status of the flycatcher in those areas. Mitigation and minimization measures will likely fully offset the habitat expected to be unavailable, modified, or lost in the HCP area over the next 30 years. If we have underestimated the extent of habitat that may be unavailable, modified, or lost the HCP includes adaptive management for additional mitigation. Thus, the HCP will provide a benefit to the status of the flycatcher over the long term.

**Effects to Southwestern Willow Flycatcher Proposed Critical Habitat**

It is anticipated that the covered activities will primarily result in relatively small and dispersed impacts to proposed critical habitat. The 304.2 acres expected to be impacted is 0.3 percent of the 81,002 acres of proposed critical habitat in the Valley. Consequently, we expect the effect to proposed critical habitat to be insignificant.

**Effects to Yellow-billed Cuckoo**

Routine agricultural practices such as grazing can result in degraded or reduced extent of habitat by browsing and trampling of habitat or increased chance of subsequent erosion that may remove habitat. Annual grazing may keep habitat below the height or density required for the cuckoo. Fence construction and maintenance can permanently or temporarily remove and bisect habitat. Ditch clearing and maintenance or other water facility maintenance and new water facility construction can also permanently or temporarily remove habitat. Water management can reduce water occurring in natural waterways or manmade canals and ditches that was previously available to develop riparian and wetland areas. However, it may create some habitat in areas previously without riparian or wetland habitat through distribution of water to new areas.

Small community infrastructure projects such as vegetation removal from floodways and infrastructure construction and maintenance such as levees, bridges, and roads will permanently or temporarily remove riparian habitat beneficial to the cuckoo. Sediment removal will prevent

establishment of soils that support willows or other riparian habitat and equipment used during sediment removal may permanently or temporarily crush vegetation and alter habitat.

Riparian and wetland conservation activities such as restoration, creation, channel shaping, channel stabilization, and other management activities may be beneficial in the long run but will have short-term temporary and perhaps permanent impacts to riparian habitat. Weed management will also be beneficial but may have short-term impacts through removal of cover, removal of insect production (foraging) areas, and may disturb birds during implementation.

Implementation of the covered activities over the 30-year life of the permit is expected to result in temporary modification of habitat or permanent modification or loss of habitat. Temporary habitat modification of 270 acres is expected through some of the covered activities. Riparian/willow habitat, potentially used for cuckoo nesting, and modified by actions such as cutting or burning along irrigation ditches is expected to grow back to suitable habitat within about 3 years. Because the habitat modification is expected to take place primarily in marginal habitat, have small acreage impacted, and be dispersed there should be habitat available near covered activities that displaced flycatchers can occupy. Cuckoos should be able to use the temporarily modified habitat after about 3 years if they choose to resume using the area. Permanent habitat loss or modification due to covered activities over the permit term is expected to be very small (30.4 acres) and is expected to also be in small and dispersed areas.

Loss or alteration of habitat through implementation of the covered activities can take the birds by reducing area available for breeding, feeding, and shelter resulting in loss of adult cuckoos. Loss of nests during project implementation can directly take eggs, nestlings, or dependent fledglings. Disturbance during implementation of covered activities can also occur resulting in nest abandonment and death of eggs, nestlings, or dependent fledglings.

Very little habitat on private land in the Valley has been surveyed for the cuckoo but it is possible that some suitable habitat that will be impacted by covered activities will be occupied by cuckoos. Overall, the extent of temporary or permanent habitat loss is only about 3 percent of available cottonwood-dominated riparian cuckoo habitat in the Valley Most of the habitat impacted by the covered activities is anticipated to be marginal habitat, so no more than 10 percent of the habitat is expected to be occupied. Therefore, the take of adult cuckoos is calculated by dividing the amount of affected habitat (304.2 acres) by the average territory size (54.4 acres) resulting in 5.6 territories. Multiplying 5.6 territories by 10 percent, results in 0.56 territories. Rounding up to the nearest whole number results in anticipated take of 1 territory. Assuming all territories have breeding pairs, it is anticipated that 2 individual adults will likely be taken by the covered activities. The removal or alteration of habitat by covered activities harms adults by reducing habitat available for breeding, feeding, and sheltering, which can affect reproduction efforts and indirectly effect individual birds by reducing food and cover necessary to sustain the cuckoo. The anticipated take of territories is only 0.1 percent of the number of territories rangewide.

Covered activities taking place in nesting areas will likely scare away adult cuckoos but immobile or less mobile eggs, nestlings, or dependent fledglings could be injured or killed causing take at these life stages. If there is one territory it is anticipated that one nest would be

taken. Average clutch size is 4 eggs (Ehrlich et al. 1988). Therefore, it is anticipated that 4 eggs, nestlings, or dependent fledglings could be taken by the covered activities. The form of take is either direct take by destroying eggs, nestlings, or dependent fledglings or through harassment such that adults do not return to the nest site and eggs, nestlings or fledglings die as a result.

***Effects of Yellow-billed Cuckoo Mitigation and Minimization Measures***

Mitigation and minimization measures were designed to offset, to the maximum extent practicable, the effects of the covered activities to the cuckoo. To offset these effects, the HCP proposes a comprehensive mitigation program consisting of protection of land and maintenance, restoration or enhancement of riparian vegetation. These mitigation measures address the impacts to an estimated 30.4 acres permanently impacted and an estimated 270 acres temporarily impacted on an average annual basis over the life of the permit. Additionally, community outreach and education and county land use ordinances will minimize impacts to the cuckoo and its habitat.

Although mitigation will greatly benefit the cuckoo, implementation of mitigation measures has some potential to harm or harass cuckoos. Activities such as habitat restoration or enhancement may remove or damage small amounts of habitat, or could disturb nearby cuckoos resulting in harassment. Protocols for avoiding or reducing these effects, to the extent possible, will be built into the management plans for properties participating in mitigation.

***Summary of the Effects to Cuckoos***

Over the 30-year term of the permit, and considered in addition to baseline conditions, the cuckoo should benefit from implementation of the HCP. Protection and management of riparian habitats will improve the status of the cuckoo in the action area. Mitigation and minimization measures will likely fully offset the habitat expected to be unavailable, modified, or lost in the HCP area over the next 30 years. If we have underestimated the extent of habitat that may be unavailable, modified, or lost the HCP includes adaptive management for additional mitigation. Thus, the HCP will provide a benefit to the status of the cuckoo over the long term.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, or local private actions that are reasonably certain to occur in the action area. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. Effects of past Federal and private actions are considered in the Environmental Baseline.

**Private Land Development**

Over the past 10 years development pressure has increased along the Rio Grande corridor. This pressure has been driven primarily by a demand for retirement and vacation homes along the river between Del Norte and South Fork (Rio Grande County 2004). One of the purposes for the Rio Grande Initiative conservation efforts was to address the potential impacts of increasing

development (RiGHT 2006). While several new subdivisions within the greater Rio Grande corridor have been developed within recent years, the development pressure has somewhat abated since the beginning of the recession in 2008. Based on population forecasts developed by the Colorado State Demography Office, the San Luis Valley population is expected to grow by 45 percent by the year 2040 (Colorado State Demography Office 2012). This level of growth will likely contribute to additional private land development.

The Rio Grande County Joint Master Plan identifies the Rio Grande corridor, outside of the floodplain, as Opportunity Areas in which "new growth or redevelopment is anticipated and can potentially be accommodated" (Rio Grande County 2004). The Alamosa County Conceptual Land Use Plan includes goals that encourage and support the conservation of key wildlife habitat areas, including riparian and wetland ecosystems. The plan also designates most of the Rio Grande corridor outside of Alamosa city limits as a "rural landscape retention area" (Alamosa County 2008).

While the timing and location of specific development projects along the Rio Grande corridor are speculative, the continued subdivision and development of private lands along this corridor, particularly west of Del Norte, is a long-term trend that will continue into the foreseeable future.

**Climate Change**

Changes in global climate patterns have the potential to affect habitat conditions in the Valley due to changes in precipitation patterns, irrigation practices, surface and ground water conditions, and other variables that can influence the growth, extent, and composition of riparian vegetation. A great deal of uncertainty currently exists in predicting and understanding the effects of future climate change on ecological systems (USFWS 2009). The terms "climate" and "climate change" are defined by the Intergovernmental Panel on Climate Change (IPCC). "Climate" refers to the mean and variability of different types of weather conditions over time, with 30 years being a typical period for such measurements, although shorter or longer periods also may be used (IPCC 2007, p. 78). The term "climate change" thus refers to a change in the mean or variability of one or more measures of climate (e.g., temperature or precipitation) that persists for an extended period, typically decades or longer, whether the change is due to natural variability, human activity, or both (IPCC 2007, p. 78). Various types of changes in climate can have direct or indirect effects on species. These effects may be positive, neutral, or negative and they may change over time, depending on the species and other relevant considerations, such as the effects of interactions of climate with other variables (e.g., habitat fragmentation) (IPCC 2007, pp. 8–14, 18–19).

Currently reported projections call for small increases in both annual average temperature and precipitation in the Valley and its watershed by 2050 (Climate Wizard 2011). While changes to precipitation and habitat are likely given trends, the timing, magnitude, and nature of those changes and their subsequent effects on riparian habitat and the covered species in the Valley are not known.

**Cumulative Effects to the Southwestern Willow Flycatcher**

The flycatcher could be impacted by future land development activities but it is not expected that the impacts would be significant given that development is likely to occur outside of the floodplain and therefore, primarily outside of habitat for the flycatcher. The projections for climate change call for an increase in temperature and precipitation in the future. It is unknown what effect, if any, temperature increase may have on the flycatcher. However, the increase in precipitation would most likely expand riparian habitat and benefit the flycatcher.

**Cumulative Effects to Southwestern Willow Flycatcher Proposed Critical Habitat**

It is expected that cumulative effects will have little influence on the primary biological features or constituent elements of proposed critical habitat because it is likely that future development will occur outside of proposed critical habitat and an increase in precipitation may expand habitat within proposed critical habitat units.

**Cumulative Effects to the Yellow-billed Cuckoo**

The cuckoo could be impacted by future land development activities but it is not expected that the impacts would be significant given that development is likely to occur outside of the floodplain and therefore, primarily outside of habitat for the cuckoo. The projections for climate change call for an increase in temperature and precipitation in the future. It is unknown what effect, if any, temperature increase may have on the cuckoo. However, the increase in precipitation would most likely expand riparian habitat and benefit the cuckoo.

CONCLUSIONS

**Southwestern Willow Flycatcher**

After reviewing the current status of the southwestern willow flycatcher, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is our biological opinion that the proposed action is not likely to jeopardize the continued existence of the southwestern willow flycatcher. We present our no-jeopardy conclusion for the following reasons:

1. A net conservation benefit to the species is expected because mitigation will offset impacts and mitigation through conservation easements will protect large patches of high quality habitat in perpetuity or for long durations.

2. Mitigation outside of conservation easements will promote the maintenance, enhancement, or restoration of suitable habitat. Minimization measures will promote maintenance of existing habitat.

3. The anticipated adverse effects of temporary habitat modification to flycatchers in the Valley will primarily be of short duration (about 3 years at a given site) and flycatchers will likely return to temporarily impacted habitat once it returns to suitable condition.

4. The level of habitat loss or modification is only about 2 percent of the woody riparian habitat in the Valley and the level of take expressed in adult flycatchers is only about 0.2 percent of the rangewide population estimate.

5. If the potential impacts (304.2 acres) are underestimated the permittees have committed to adaptive management to mitigate the additional loss of habitat and to contribute to the conservation and recovery of this species.

6. The quantity of nesting habitat that currently occurs and will occur through mitigation is sufficient to meet the recovery goals outlined for the San Luis Valley Recovery Unit as prescribed in the flycatcher recovery plan (USFWS 2002a).

7. Mitigation proposed in the HCP is consistent with the flycatcher recovery plan.

## INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. Harm is further defined by the Service include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering (50 CFR 17.3). Harass means an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take of a listed animal species that is incidental to, and not the purpose of, the carrying out an otherwise lawful activity conducted by the Federal agency or the applicant. Under the terms of sections 7(b)(4) and 7(o)(2) of the Act, taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act, provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary, and must be undertaken so that they become binding conditions of any permit issued to any applicant, permittee, or contractor, as appropriate, in order for the exemption in section 7(o)(2) to apply. If the permittee fails to adhere to these terms and conditions, the protective coverage of the section 10(a)(1)(B) permit and section 7(o)(2) may lapse.

## AMOUNT OR EXTENT OF TAKE OF SOUTHWESTERN WILLOW FLYCATCHER

Take of 6 adult flycatchers is permitted over the 30-year permit term in the form of harm through removal or alteration of 304.2 acres of habitat. Harassment of adult flycatchers through disturbance by implementation of covered activities can result in nest abandonment resulting in take of eggs, nestlings, or dependent fledglings.

It is anticipated, either by harassment of adults or by direct loss, that 12 eggs, nestlings, or dependent fledglings could be taken by the covered activities.

EFFECT OF THE TAKE OF SOUTHWESTERN WILLOW FLYCATCHER

In this Opinion, we find that the level of take anticipated is not likely to jeopardize the continued existence of the southwestern willow flycatcher. The reasons for this conclusion are described above under "Conclusions".

REASONABLE AND PRUDENT MEASURES AND TERMS AND CONDITIONS FOR SOUTHWESTERN WILLOW FLYCATCHER

The HCP contains all measures necessary to minimize incidental take to the maximum extent practicable. Monitoring will be conducted as stated in Section 6 of the HCP. Therefore, no additional reasonable and prudent measures or terms and conditions are necessary.

SOUTHWESTERN WILLOW FLYCATCHER PROPOSED CRITICAL HABITAT

After reviewing the current status, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is our opinion that the proposed action will not result in adverse modification or destruction of proposed critical habitat for the flycatcher. This opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 C.F.R. 402.02. Instead, we have relied upon the statutory provisions of the Act to complete the following analysis with respect to critical habitat. Implementation of the covered activities will not result in direct or indirect alteration of habitat that appreciably diminishes the value of proposed critical habitat for both survival and recovery of the flycatcher. Within the San Luis Valley, no more than 2 percent of habitat will be impacted if covered activities occur evenly throughout the Valley including within proposed critical habitat. This determination is based on the reasons stated above in the biological opinion conclusion.

YELLOW-BILLED CUCKOO

After reviewing the current status, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is our opinion that the proposed action is not likely to jeopardize the continued existence of the western yellow-billed cuckoo. Critical habitat has not been proposed for the cuckoo, thus none will be affected. We present our no-jeopardy conclusion for the following reasons:

1. A net conservation benefit to the species is expected because the baseline condition in the valley will improve through conservation easements that will hold larger patches of higher quality habitat that is protected from development in perpetuity or for long durations.

2. Mitigation outside of conservation easements will promote the maintenance, enhancement, or restoration of suitable nesting habitat. Minimization measures will promote maintenance of existing habitat.

3. The level of habitat loss or alteration is about 3 percent of the cottonwood-dominated riparian habitat in the Valley and the level of take expressed in adult flycatchers is about 0.1 percent of the rangewide population estimate.

4. If the potential impacts are underestimated the permittees have committed to adaptive management to mitigate the additional loss of habitat and to contribute to the conservation of this species.

## AMOUNT OR EXTENT OF TAKE OF YELLOW-BILLED CUCKOO

Take of 2 adult cuckoos is permitted over the 30-year permit term in the form of harm through removal or alteration of 304.2 acres of habitat. Harassment of adult cuckoos through disturbance by implementation of covered activities can result in nest abandonment resulting in take of eggs, nestlings, or dependent fledglings.

It is anticipated, either by harassment of adults or by direct loss, that 4 eggs, nestlings, or dependent fledglings could be taken by the covered activities.

## EFFECT OF THE TAKE OF YELLOW-BILLED CUCKOO

In this Opinion, we find that the level of take anticipated is not likely to jeopardize the continued existence of the cuckoo. The reasons for this conclusion are described above under "Conclusions".

## REASONABLE AND PRUDENT MEASURES AND TERMS AND CONDITIONS FOR YELLOW-BILLED CUCKOO

The HCP contains all measures necessary to minimize incidental take to the maximum extent practicable. Monitoring will be conducted as stated in Section 6 of the HCP. Therefore, no additional reasonable and prudent measures or terms and conditions are necessary.

## REINITIATION NOTICE

This concludes formal consultation on our proposed issuance of incidental take permits to the San Luis Valley Regional HCP permittees for implementation of covered activities within the six county area in Colorado covered by the HCP. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: 1) the amount or extent of incidental take is exceeded; 2) new information reveals effects of the agency action that may adversely affect listed species or critical habitat in a manner or to an extent not considered in this Opinion; 3) the agency action is subsequently modified in a manner that causes an effect to a listed species or critical habitat that was not considered in this Opinion; or 4) a new species is listed or critical habitat designated that may be affected by this action.

If we may be of further assistance, please contact Terry Ireland of my staff at (970) 243-2778, extension 16.

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